

Comments on the Interim Report on the Investigations on the Extraction of Groundwater by M/s Hindustan Coca-Cola Beverage Private Limited at Plachimada, filed before the Hon'ble High Court of Kerala on May 14, 2004 By Centre for Science and Environment, New Delhi

The High Court of Kerala had directed the Centre for Water Resources Development and Management (CWRDM), Vide Order No.WA/2125/03 dated 19th December 2003, to conduct a scientific investigation into the allegation that the use of water by M/s Hindustan Coca-Cola Beverages Private Limited at Moolathara village in Chittur Taluk of Palakkad district had resulted in shortage and scarcity of drinking water in neighbouring areas.

An interim report has been filed by the committee headed by the executive director of CWRDM to the High Court of Kerala. The interim report has estimated the availability of the annual groundwater resources in Chittur Block as 66.7 million cubic meters (mcm) and the total annual groundwater recharge as 74.1 mcm. This available recharge has been allocated by the committee to different users-domestic agriculture and commercial. The committee has concluded, "it can be very safely concluded that under normal rainfall conditions the planned groundwater withdrawal of 6 lakh litres per day by Coca-Cola will not adversely affect the availability of groundwater in and around the factory complex." On careful review of the report, it is found that the Committee grossly overestimates the natural recharge – the groundwater availability – in the area. If this is understood and challenged then it becomes clear that there is little or no natural recharge available for use for commercial purpose. **In other words, no allocation can be made from the natural recharge to the commercial users like Coca Cola and that they must, for their water needs like Coca Cola and that they must, for their water needs be totally dependent on artificial recharge – collecting rainwater in storage tanks – and recycling and reusing their water.**

Furthermore, a principle of allocation or restriction of ground water withdrawal allocation based on what happened in the just preceding summer is not acceptable. This is because, unlike surface water, manifestation of groundwater levels in the bore well and tube well (not in shallow open wells) is the by-product of cumulative impact of rainfall pattern of past several years and not just the preceding sum.

Let us understand the following issues:

1. What is the available annual groundwater resource in Chittur block?

To estimate this we need to understand firstly, what is the volume of rainfall in the block and secondly, what is the natural recharge potential of the land.

1. The average rainfall in Chittur block as recorded in Chitturpuzha rainguage station in Palakkad district (see table 2 of interim report) over the period 1994-95 to 2003-04 is 1,413 mm. The total land area of the block is 261.2 sq km (see table 1 of interim report).

Therefore, the total volume of rainfall available for natural recharge is 369.1 mcm.

2. The natural recharge potential depends on the soil characteristics, geomorphology (rock type) and other variables like topography. The Chittur block is peculiar in the state as it is characterised by black soil (known as the Chittoor black soil)¹. In addition, the rock type is granite and its topography is undulating. The question is therefore, that is the potential for natural recharge in this area.

On analysis of the computation of the interim report we find that it has estimated that 20 percent of the rainfall can be recharged. However, the Central Groundwater Board's assessment of groundwater resources of Kerala done in 2003, estimates that the rainfall filtration in weathered rock is between 5-8 per cent². The CGWB in its 1997 assessment methodology recommends that for the granites, the natural recharge potential is between 2-4 per cent³. It is also accepted that the black soils of Chittur are particularly bad for recharge.

The different estimates are as follows:

	% Of rainfall that can be naturally recharged	Total rainfall (mcm)	Total natural recharge (mcm)	90% available for use
1.	At 20 per cent	369.1	74.1	66.7
2.	At 10 per cent	369.1	36.9	33.2
3.	At 5 per cent	369.1	18.45	16.6

Therefore, the estimated amount of natural recharge that is available for use will be between 16.6 to 33.2 mcm based on the natural recharge of 5-10 per cent of the rainfall of the block.

In other words, the estimation used by the Interim Report is faulty and cannot become the basis for allocating the water resources of the block to different users.

2. What is the demand for water in the block?

	Category users of water	Basis of estimating use	Amount of use (mcm)
1.	Domestic use	Population 2001: 1,58,510 x 160 pcd ^{4, 5}	9.25 mcm
2.	Irrigation (100 per cent area)	Cultivable area: 18,287 ha x 0.6	109.72 mcm
3.	Irrigation (at 50 per cent area as estimated by Interim Report) ⁶		54.86 mcm

¹ See map of Agro-ecological zones of Kerala from Kerala Agricultural University website.

² Central Groundwater Board 2003, Groundwater Resources of Kerala (based of GEC 1997 methodology), CGWB, Trivandrum.

³ CGWB 1995, *Groundwater Resources of India*, Faridabad.

⁴ Based on computation given by Interim Report

⁵ Based on computation given by Interim Report

⁶ The Interim Report estimates that 50 per cent of the cultivable area is irrigated, that is 9,144.00. It then further assumes that share of the groundwater resources as a percentage of total water required to meet irrigation supply is 50 per cent and it further assumes that the efficiency of the system that harnesses and supplies groundwater to meet irrigation water supply is 60 per cent. In other words, it depresses the demand from agriculture enormously and underestimates it.

It is important to note that the Interim Report also underestimated the requirements from domestic and irrigation sector.

It has estimated that the total requirement from these two sectors would be 62.5 mcm, which incidentally is not available either, if the amount of natural recharge is recalculated.

But more importantly, it estimates that 50 per cent of the cultivable area is irrigated, that is 9,144.00 ha. **It then further assumes that share of the groundwater resources as a percentage of total water required to meet irrigation supply is 50 per cent and it further assumes that the efficiency of the system that harnesses and supplies groundwater to meet irrigation water supply is 60 per cent. This when its own report admits that groundwater is the only source of irrigation and drinking water in the block. In other words, it depresses the demand from agriculture enormously.**

Assessment of demand from domestic and irrigation and surplus available for allocation

		Interim Report's estimation of demand, supply and surplus (mcm)	Recalculated estimation
1.	Current demand for domestic sector	16.8	9.25
2.	Irrigation (of 50 per cent cultivable area)	45.7	54.86
3.	Total available annual recharge	66.7	16.6 to 33.2
4.	Surplus or deficit available for allocation to commercial sector	+ 4.2	(-) 47.51 to (-) 30.91

We need to note that as per the National Water Policy, priority has to be given to drinking and then irrigation and only in the case of surplus availability, can water be allocated to commercial users. Therefore, in this situation there is no natural recharge available for commercial use.

3. What is Coca-Cola's demand for water?

There are varying estimates of the factory's demand for water. According to the 2002 report of Dr.R.N Athavale, a consultant for Coke, the factory would require at full capacity 6.35 lakh litres per day. The Interim Report says that its measurement of water use during the period of January to March reveals that the plant would use roughly 5 lakh litres per day.

Therefore, the demand for water in the factory would range from 0.182 mcm to 0.23 mcm of water annually.

Given that the natural recharge of rainfall is barely adequate to meet the domestic and agricultural needs, no natural recharge – or groundwater – can be allocated to the factory.

4. What then is the way ahead?

The factory should be required to meet its needs through the following approaches:

- a. Through artificial recharge: by harvesting and storing all its rainwater endowment. We have to however note that this will reduce the amount of natural recharge available to the surrounding area.

Through complete reuse and recycling of the rainwater that is harvested from its complex so that no water is discharged from the factory and it closes its cycle.

The area of the factory is 34 acres and with an average annual rainfall of 1,413 mm, the total collection potential is 0.194 mcm.

On paved areas – rooftops and pavements – it is possible to capture up to 80 per cent of this rainfall.

This would mean that the factory, if it captures, the annual rainfall over its entire factory compound and stores it in tanks, would be able to collect up to 0.155 mcm of water. Given the topography of this region, storing in groundwater is not as effective and storage tanks would need to be constructed for maximising the yield of rainwater.

This is equivalent to 67-85 per cent of its annual needs, depending on the quantum of production.

In addition, as it uses 4 litres of water to produce 1 litre of beverage, it has the potential of completely recycling and reusing 75 per cent of its water use. This would require investment in technology for water cleaning which is feasible.

5. Should the raw material used be free for this industry?

The two soft drink companies have told the Joint Parliamentary Committee on Pesticide Residues in and Safety Standards for Soft Drinks, Fruit Juice and Other Beverages (JPC) that they use 4 litres of water for every one litre bottled. One litre bottle is sold for Rs.20-25. About 90% of the raw material cost is water, which is not paid for.

It is important to understand that current law provides that these companies pay virtually nothing for the raw material that they sell. The only payment made for water is through the water cess – paid on the basis of discharge of effluent. If we estimate on the basis of the water cess (lets consider the highest applicable rate of 30 paise per 100 litre water used) and consider that these companies use 4 litres of water to produce 1 litre of soft drink (at the very minimum), then a simple calculator would show that for every 1 litre soft drink, these companies pay about 0.1 paise as the water cess. **In other words, they pay 1 paise for every 10 litre soft drink produced. Consider that this same 10-litre soft drink would sell for roughly Rs.200.00 (based on Rs.20.00/litre) and that the product is 90 per cent water.**

Therefore, there is a difference between companies that use water in their process like pulp and paper industry and those that consume water as a raw material like bottled water and soft drink companies. In the case of paper industry, they use water for process and then discharge the almost same amount (loss is only by evaporation) as treated wastewater. Therefore, there is no consumption of water in the paper industry. They pay water cess to the state pollution control boards based on the

amount of wastewater discharged which is similar to the amount of water used. It is another matter, that the water cess charge is low and needs revision.

The JPC discussed this issue and in its report the committee has expressed concern (see page 94: 2.182) that these companies (soft drink manufacturers and bottled water companies) extract huge amounts of groundwater, but they are not being charged anything for using the water. The only charges they pay is a petty amount as water cess.

The Joint Parliamentary Committee, which has endorsed the recent judgement delivered by the Hon'ble High Court of Kerala on 16.12.2003 saying that in its view, post the judgement, the stand taken by the S3cretary, Ministry of Water Resources, who has argued the legal position that the groundwater belongs to the land owner, "loses relevance". **The Hon'ble High Court has opined in no uncertain terms that even in the absence of any law governing ground water, the Panchayat and state are bound to protect groundwater from excessive exploitation. The JPC has directed that companies must be required to pay for this use of raw material.**

Given this direction from JPC, it could be argued that even in the case the company, captures and uses its rainwater endowment, it should be asked to pay for the water that it exports from the plant to the local Panchayat. This is necessary as it is using this water as a raw material, for profit, and its cost should be paid to the local government to invest in further water harvesting initiatives.